

REMARKS

At the outset, the Examiner is thanked for the thorough review and consideration of the subject application. The final Office Action of December 31, 2003 has been received and contents carefully reviewed.

Claims 41-56 are currently pending in the present application. Reexamination and reconsideration of the application in view of the following remarks are respectfully requested.

In the Office Action, the Examiner rejected claims 41-54 under 35 U.S.C. § 112 ¶1, as failing to comply with the written description requirement, and rejected claims 41-56 under 35 U.S.C. § 103(a) as being unpatentable over Yamaguchi et al. (U.S. Patent No. 5,897,346). Applicant respectfully traverses these rejections.

The rejection of claims 41-54 under 35 U.S.C. § 112 ¶2 is respectfully traversed and reconsideration is requested. In the Office Action on page 2, the Examiner states, "Applicant's specification page 6, lines 20-24 describing figure 2 B states: " Subsequently, the exposed surface of the active layer 35 collided with the implanted hydrogen ions is heated to the optimal temperature range falling between about 200-300 degrees Celsius, thereby forming an excited region 41, as illustrated in FIG. 2B. (emphasis supplied)." Applicant respectfully disagrees.

Applicant respectfully submits that the Examiner's citation above refers to a condition of the active layer before forming the source and drain regions. [emphasis added] In the present invention, the source and drain regions are formed by implanting P, As, B, BF₂, or the like. See Fig. 2C and paragraphs [0029] – [0031]. Moreover, paragraph [0034] of the present application discloses, "the present invention requires no costly activation equipment... implanting and activating impurity ions simultaneously, which accomplishes both (1) impurity doping; and (2) impurity ion activation." Thus, Applicant respectfully submits that the claimed feature, "whereby a post heat treatment for activation of the impurity ions is eliminated from the method of fabricating the thin film transistor", is properly discussed in the present application. Accordingly, Applicant respectfully submits that claims 41-54 are in full compliance with 35 U.S.C. § 112 ¶1.

The rejection of claims 41-56 under 35 U.S.C. § 103(a) as being unpatentable over Yamaguchi et al. is respectfully traversed and reconsideration is requested. Claim 41 is

allowable over the cited references in that claim 41 recites a combination of elements including, for example, “forming an impurity region by implanting impurity ions to said excited region while the excited region remains in an excited state, whereby a post heat treatment for activation of the impurity ions is eliminated from the method of fabricating the thin film transistor.” None of the cited references, singly or in combination, teaches or suggests at least this feature of the claimed invention. Accordingly, Applicants respectfully submit that claim 41 and claims 42-54, which depend therefrom, are allowable over the cited references.

Claim 55 is allowable over the cited references in that claim 55 recites a combination of elements including, for example, “forming an impurity region by implanting impurity ions to said excited region while the excited region remains in an excited state, wherein the activation of said impurity ions implanted occurs as the step of said implanting impurity ions is performed.” None of the cited references, singly or in combination, teaches or suggests at least this feature of the claimed invention. Accordingly, Applicants respectfully submit that claim 55 and claim 56, which depends therefrom, are allowable over the cited references.

In the Office Action on page 7, the Examiner states, “Applicant’s second contention... is not persuasive because see Yamaguchi figs. 1C and A, fig. 1C implanting P⁺ ions, and col. 8, lines 24-25 describe the activation occurring while the implanting is performed.” Applicant respectfully disagrees.

Yamaguchi et al. col. 8, lines 20-28 discloses, “Annealing by irradiation with a laser light is performed to activate P ions *introduced in FIG. 1C* and to recover the damage caused by ion implantation, by using KrF excimer laser, with one to several shots at a power density of 100-300 mJ/cm² The effect of laser irradiation will be enhanced by simultaneous heating at about 300.degree. C. In this way the source and drain regions 16 and 18 are formed. At the same time, the channel forming region 17 is formed by self-alignment. (FIG. 1D)” [emphasis added] Applicant respectfully submits that, according to Yamaguchi et al.’s disclosure recited above, Yamaguchi et al. uses a laser annealing as a post heat treatment to activate the P ions *after* the implantation process of P ions. [emphasis added]

Applicant believes the foregoing remarks place the application in condition for allowance and early, favorable action is respectfully solicited. If the Examiner deems that a telephone conference would further the prosecution of this application, the Examiner is invited to call the

undersigned attorney at the telephone number (202) 496 - 7500. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911.

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